



ARMY GROUND RISK-MANAGEMENT INFORMATION

# Countermeasure

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***It's Gettin'  
Hot Out Here***

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**M**an, is it hot or what? What is “hot,” anyway? I guess it depends on your point of view. What my teenage daughter considers hot, I consider criminal. What a guy from Michigan considers hot, a bubba from Alabama considers sweater weather. And compared to July in the sandbox, a sweltering summer day in the Deep South seems like a break. Obviously hot is relative, but here’s my point: Heat kills, but it also adversely affects mental performance long before it’s deadly. Soldiers ill prepared for the heat tend to perform poorly, and today’s Army is no place for poor performance. You must do everything you can to protect your “squash!”

## Protect Your Squash!

### COL JOSEPH MCKEON

Command Surgeon  
U.S. Army Combat Readiness Center

#### Mental performance

Have you ever noticed how hard it is to stay awake in an afternoon class when the room’s hot, the instructor’s boring, and you’ve just had lunch? Part of the problem is the boring instructor (but you stayed awake in the morning);

another issue is lunch (all that blood flow is going to your gut to digest that super-sized value meal); and another factor is what we call the circadian trough (the time of day when everyone’s sleepy). But the hot, stuffy room is a big piece of the puzzle. We just don’t perform as well mentally when we’re in a hot environment. It’s no wonder much of the world takes

a siesta on hot, non-productive afternoons.

The upper limit of heat exposure for unimpaired mental performance is about 85 °F wet bulb globe temperature (WBGT) for an individual working outdoors 2 hours or longer. (A WBGT of 85 °F is at the bottom of the “yellow” range and is a relatively modest heat threat.) So, even with proper


work and rest cycles and adequate hydration, Soldiers in hot environments will suffer mental performance degradation that could affect the mission.

Continuous, repetitive, boring tasks tend to be affected most by degraded mental performance. Driving in a convoy in the afternoon with K-pot and body armor on with an outside temperature well over 100 °F immediately comes to mind as an example. With the hazards that exist from man, machine, and environment, a convoy movement isn't the best time for your mental performance to suffer. Leaders must take these factors into consideration when planning operations in hot conditions.

### **Vigilance**

Vigilance is one of those fancy words that means being alert, watchful, or paying close attention. Vigilance is affected negatively by heat, which isn't a good thing—especially in a combat theater. Many military activities require Soldiers to be watchful and alert for extended periods of time. Performing sentry or fire guard duty, surveillance activities, monitoring instruments, and operating a vehicle all demand vigilance. Temperatures higher than 85 °F with 63 percent relative humidity affect the vigilance of Soldiers, even those well acclimatized to the heat. It's important that commanders recognize this limitation and take steps to ensure their Soldiers get adequate breaks from extended duties. An extra set of eyes also will help mitigate these effects. Don't set your Soldiers up for failure!





*"Leaders must do everything in their power to provide a cool, protected environment for their Soldiers. When that isn't possible, leaders should plan ahead for possible performance lapses due to fatigue and mental exhaustion."*

### **Changes in sleep behavior**

Sleep, like food and water, is necessary for health. Humans can go short periods of time without sleep, but eventually a sleep debt will build up and must be paid. A restful night's sleep lets the brain restore itself, thereby allowing the individual to perform at their maximum ability.

Everyone reading this article probably realizes that sleeping in a hot environment affects their sleep in a bad way. Humans acclimatized to heat stress actually increase their physical performance (think about summer football practice and how much "tougher" you were when the season started). Sleep patterns, however, don't improve over time in a hot environment

because sleep quality and effectiveness are reduced at high temperatures. In fact, studies have shown that heat is more disruptive to sleep than noise! In hot environments you don't wake up as rested as you should, and your performance suffers as a consequence.

Leaders must do everything in their power to provide a cool, protected environment for their Soldiers. When that isn't possible, leaders should plan ahead for possible performance lapses due to fatigue and mental exhaustion. The unit's risk assessment also should reflect the increased hazard of fatigue.

### **Conclusion**

There you have it. Heat cramps, heat exhaustion, and

heat stroke have been described frequently in this magazine and other publications in the past, but the adverse effects on cognitive abilities often aren't discussed. Living and working in a hot environment has a significant impact on human sleep patterns, work ability, and cognitive function. Simply put, you have trouble sleeping and paying attention, and you also aren't as smart as usual. Stay cool, and make sure you take these factors into consideration when planning your next convoy or mission! 🐢

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## THE FIRST ENEMY YOU

If you deploy to Operation Iraqi Freedom this summer, your Soldiers will face a crushing enemy before they cross the Kuwaiti border and head north. This enemy—heat—has defeated a significant number of Soldiers since the beginning of operations in Iraq. Between July and August 2004 (the hottest months in Kuwait),

134 Soldiers there were reported as heat casualties and were lost from training. It's likely the actual number is underreported by as much as 80

percent, and the true number of injured Soldiers might be as much as five times higher.

The rate of reported heat injury per week peaked at 20 per 10,000 Soldiers in mid-July 2004. Each heat casualty was lost to their unit for 2 or more days out of an already tight training schedule. Three Soldiers likely were lost to the fight permanently. These three developed heat stroke, and two were from the same unit and suffered their injury within days of each other. They survived but were evacuated from theater, unlikely to return.

As the medical brigade in theater, we know in advance

the schedule of units moving into the northern Kuwait camps. Even without this information, however, we can tell when a new unit rotates in because of the spike in heat injuries. The camps' medical facilities typically begin seeing heat casualties within the first week of a unit's arrival. One unit that rotated through in summer 2004 evacuated as many as 10 percent of its Soldiers to the local Level II facility in a single day.

Soldiers we've talked to said they believed exposure in the summer months in the United States sufficiently prepared them for deployment to Kuwait



# U MEET

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and Iraq. This belief couldn't be further from the truth. The desert conditions of Kuwait and southern Iraq aren't duplicated anywhere in the United States. We also often hear, "But I was drinking water, doc." Adaptation to this harsh desert environment is more than a matter of simple hydration. Water consumption is only one part of the process—acclimatization is a vital component of Soldiers making it through the summer months in the desert.

One unit that did everything right to help their Soldiers beat the heat was the 2nd Brigade Combat Team (BCT) of the 2nd Infantry Division (2ID). This unit's Soldiers avoided significant heat injury altogether. The 2nd BCT deployed to Kuwait

in late summer 2004 during the peak months for heat injury. Although a small number of 2nd BCT Soldiers received intravenous fluids on firing ranges for treatment of volume depletion, there were no reported cases of heat exhaustion or heat stroke. The 2nd BCT was successful because their overall approach to heat injury prevention was based primarily on acclimatization.

The 2nd BCT's Soldiers began their acclimatization process in Korea before their deployment. They trained all summer in the field through high temperatures and high humidity while wearing individual body armor with small arms protective insert plates

and Kevlar. On a typical August day in Korea, the temperature is 88 °F with relative humidity between 60 and 90 percent. These Soldiers trained as they would fight, wearing the equipment they would fight with, in the hottest conditions available to them.

Once in Kuwait, the unit trained from 0400 to 1100, took a break in the afternoon, and resumed training in the cooler, early evening hours. Maintenance operations also





# THE FIRST ENEMY YOU MEET

were conducted at night, because it was too hot to work around heavy metal during the day. The 2nd BCT's Soldiers deployed in excellent physical condition and continued their fitness program, which was scheduled around other training, in the early morning and evening.

The unit's Soldiers received personal training on the heat threat. They learned to recognize the symptoms of early heat injury in themselves and their fellow Soldiers and were empowered to take action. For example, Soldiers were allowed to check themselves off the firing line to sit in the shade if they felt heat effects. Leaders saw many examples of Soldiers taking buddy actions at the first sign of heat injury, measures that probably prevented serious casualties.

The unit also took the usual steps to stress hydration. Every Soldier was issued a CamelBak, which was made a mandatory part of the uniform in the months before deployment. Cold water and Gatorade also were readily available for the Soldiers. These disciplines were modeled by the unit's leaders at every level. An additional example of leadership emphasis was the stress placed on the use of lip balm and sunscreen. Special unit patches also were sewn on the desert camouflage "boonie" caps to encourage Soldiers to wear them to reduce exposure to direct sunlight.

Overall, the 2nd BCT took

more time to acclimatize and thus was better prepared for the desert than any unit we observed in summer 2004. Their strategy could be duplicated easily by any unit deploying to the desert, particularly in the summer months. Acclimatization should begin at home station well before the mobilization process. Command emphasis on basic measures to reduce unnecessary heat exposure is vital to overcoming the heat threat in theater. These measures include empowering Soldiers to monitor their own progress and using the buddy system. Heat injury prevention begins with effective leadership and leader role-modeling behavior. In a combat environment with so many unpredictable hazards, heat injury prevention is a force multiplier worthy of command emphasis. 

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**This article was reprinted courtesy Infantry and edited for content. The entire article can be found in the November-December 2004 Infantry.**



# DON'T FORGET

**JULIE SHELLEY**  
Editor

**Y**our deployment orders have come through and you're packing for a tour in Iraq or Afghanistan. You begin checking off those essential items when, suddenly, you realize your CamelBak has been in the closet for more than a year now. Even worse, there's still a little water left from the last time you used it! What can you do now?

## DID YOU KNOW?

The standard CamelBak reservoir holds 100 ounces of liquid. If the approximately 150,000 troops deployed to Iraq drink 2.25 gallons of water per day (the recommended guideline for regular activity) through their CamelBaks, together they will have consumed more than 96 million gallons of water during a 12-month deployment! That's enough water to fill nearly 5,350 average-size swimming pools!



# GET THE CAMELBAK

Every Soldier deploying to Southwest Asia, or even gearing up for an exercise at the National Training Center or Joint Readiness Training Center, hears “hydration” over and over again. From basic training on up, Soldiers are reminded constantly of the importance of staying hydrated. With this goal in mind, the CamelBak system currently is being fielded to all Soldiers as part of the Army’s Rapid Fielding Initiative. Although the CamelBak is known for its easy portability and use, individual systems require routine maintenance to keep them safe.

First and foremost, the CamelBak must be kept clean. Proper cleaning prohibits the growth of mold and bacteria, and also removes the dust and dirt that collects around the mouthpiece and fill plug in the desert. Wash the system daily with warm, soapy water. (Before storing the CamelBak, be sure the system is completely dry.) When the system hasn’t been used for awhile, fill the reservoir with water, add 2 teaspoons of household bleach, and let it sit overnight. Thoroughly rinse the system the next morning with warm water. Also, because the CamelBak is a closed system, sports drinks and other beverages containing sugar accelerate the growth of mold and other contaminants inside the reservoir. Always rinse the system thoroughly with warm water after each use with sports drinks.

The fluctuating temperatures in the desert won’t make much of a difference to your CamelBak. Cleaning is the same

in both hot and cold environments. However, the water inside the CamelBak will reach the ambient, or outside, temperature in just a few hours. When the temperature gets hot, store the full reservoir overnight in a refrigerator to keep the water cool and inhibit bacterial growth. To delay freezing during the winter, keep the system close to your body under insulated layers.

CamelBak systems are designed to last and should see you through your deployment, even if it lasts a year or longer. With proper cleaning and storage, the reservoir will last many years. Bite valves typically wear out in 3 to 4 years, depending on how frequently you use them. And, when you do make it home, be sure to store your CamelBak in a dark, cool place for your next adventure.



*Editor’s note: The U.S. Army Soldier and Biological Chemical Command and commercial industry are working to develop a personal hydration*

*system, such as the CamelBak, that provides adequate protection in a nuclear, biological, chemical (NBC) environment. The makers of CamelBak offer a protective mask adapter kit that includes a valve and protective mask connector, which allows Soldiers to connect their chemical-resistant reservoir to the mask. However, the reservoir’s barrier ability hasn’t been tested thoroughly by the Army. Therefore, CamelBaks haven’t been certified as safe for use in a chemical environment and currently are not allowed in chemical threat areas.*

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# THE CLEAR FLAG

**W**ater is a precious resource many of us take for granted. Here in the United States, water is readily available with the turn of a faucet. In the desert, however—especially during the summer—water is the key to survival.

Soldiers must stay adequately hydrated to survive in the desert and maximize their warfighting effectiveness. Humans depend heavily on water: Approximately 75 percent of the human body is made up of fluid. A loss of two quarts of fluid, or 2.5 percent of body weight, decreases efficiency by 25 percent. A loss of fluid equal to 15 percent of body weight is usually fatal.

In desert terrain, approximately 9 quarts of water per Soldier, per day, is needed. When Soldiers are active, leaders must ensure each Soldier drinks 2 quarts of water per hour. Soldiers should drink more water as physical activity increases. In very hot conditions, it's better to drink smaller amounts of water more often than to drink large amounts occasionally. Drinking a lot of water at one time can cause excessive sweating and heat cramps.

Dehydration is deadly and hits fast. During high desert temperatures, a resting Soldier can lose as much as a pint of water per hour through sweating! Sweating also can be deceptive in certain conditions. When temperatures are very high and the humidity is low, sweating may go unnoticed because it evaporates so quickly the skin appears dry. Whenever possible, sweat should be left on

the body to improve the cooling process. Soldiers must remain fully clothed—even in searing temperatures—to accomplish this.


At the beginning of their deployment, Soldiers might not always drink the amount of water they require. Newly deployed Soldiers should be encouraged to drink more, especially during acclimation. NCOs and officers must keep track of how much their troops drink to ensure they're getting enough water.

Leaders and individual Soldiers must look for the warning signs of dehydration. Very dark urine is often an early warning sign. Other symptoms include sunken eyes, a dry or sticky mouth, decreased or absent urination, decreased tears, deep and rapid breathing, lethargy, or coma. Thirst isn't an adequate indicator of dehydration because Soldiers might not feel thirsty until they've already lost 1 to 2 quarts of water.

The flip side of dehydration is overhydration—or simply put, drinking too much water too quickly. When sodium (salt) is lost through sweating and water is drunk as the replacement fluid over a period of hours, the sodium left in the blood can become diluted. This dilution causes a condition called hyponatremia, which can lead to damage in certain kinds of body tissues. Changes are most noticeable in the nervous system, where seizures, coma, and even death can occur.

Recognizing overhydration or hyponatremia is challenging because the symptoms resemble those of

heat stroke or heat exhaustion. Early symptoms include confusion, nausea, fatigue, muscle cramps, and weakness. More serious symptoms include vomiting, muscle twitches, delirium, seizures, and coma. The main difference between heat stroke and heat exhaustion, when compared to overhydration, is that overhydration doesn't cause the victim's temperature to rise. Because overhydration can be deadly, the final diagnosis must be made at a medical facility where the victim can be treated properly.

Water is a Soldier's best friend in the searing heat of Iraq, Kuwait, or Afghanistan. It's getting hotter by the day, so stay hydrated to make it home from the fight! 

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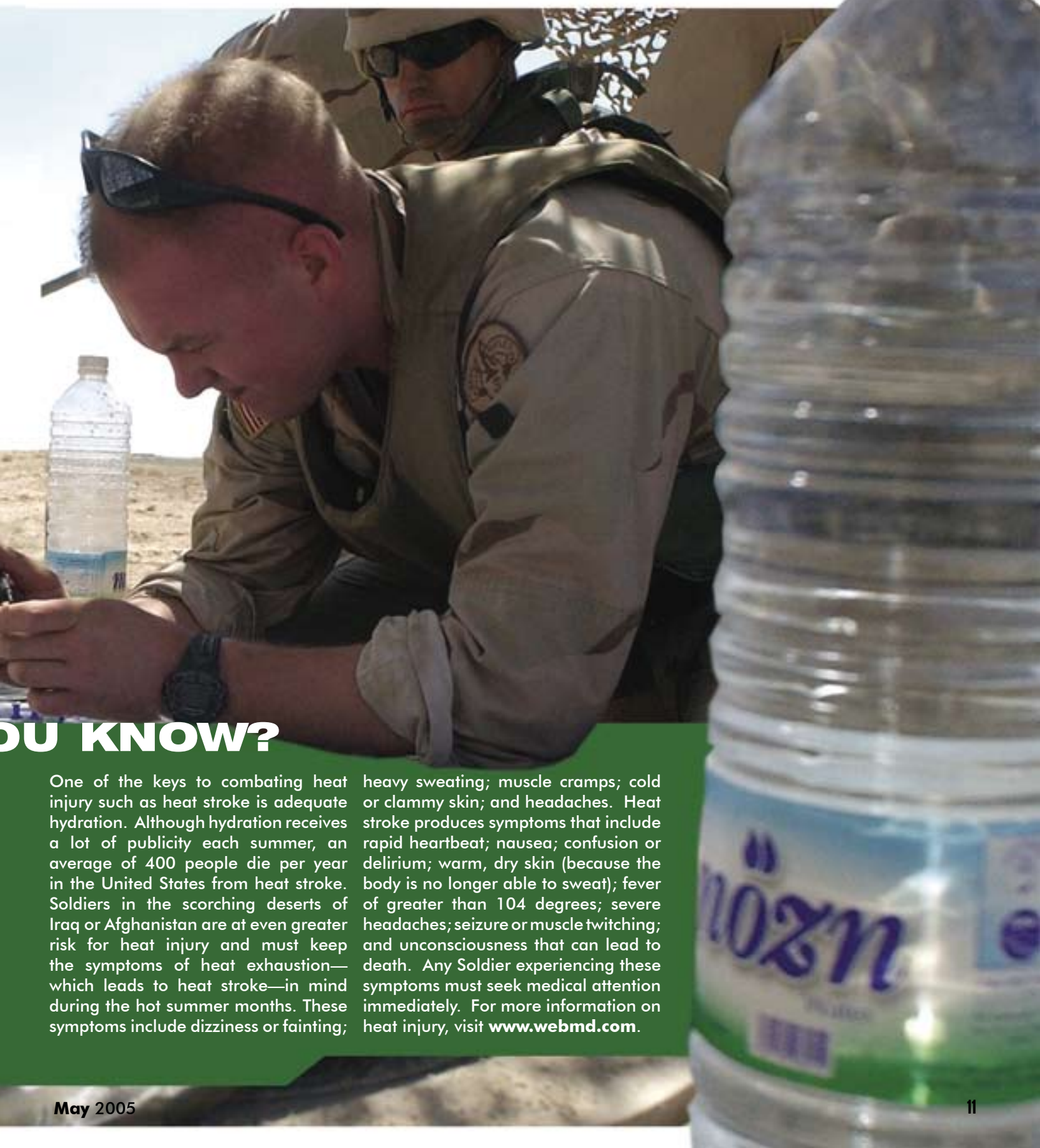
**DID YOU**



# The Clear Facts on Water The Clear Facts on

# TS ON WATER


**JULIE SHELLEY**  
Editor



## DO YOU KNOW?

One of the keys to combating heat injury such as heat stroke is adequate hydration. Although hydration receives a lot of publicity each summer, an average of 400 people die per year in the United States from heat stroke. Soldiers in the scorching deserts of Iraq or Afghanistan are at even greater risk for heat injury and must keep the symptoms of heat exhaustion—which leads to heat stroke—in mind during the hot summer months. These symptoms include dizziness or fainting;

heavy sweating; muscle cramps; cold or clammy skin; and headaches. Heat stroke produces symptoms that include rapid heartbeat; nausea; confusion or delirium; warm, dry skin (because the body is no longer able to sweat); fever of greater than 104 degrees; severe headaches; seizure or muscle twitching; and unconsciousness that can lead to death. Any Soldier experiencing these symptoms must seek medical attention immediately. For more information on heat injury, visit [www.webmd.com](http://www.webmd.com).



**T**he Middle East and its desert environment aren't new territory for the Army. Many of the Soldiers facing deployment to Iraq and Afghanistan have been there before. They remember the blistering effects of the sand, sun, and wind. However, scores of deploying Soldiers haven't endured the harsh and brutal conditions awaiting them there.

The desert environment can have a devastating impact on personnel if they're not prepared for it. Certain precautions must be taken to protect Soldiers and their equipment during a desert deployment. Factors such as acclimatization, adequate hydration, sun protection, heat injury prevention, and other concerns must be dealt with before, and especially during, deployment to a desert region. Many of these factors already have been discussed in this issue, so we'll focus on the "minor" stuff that awaits Soldiers in the desert.

# Little Things to

**JULIE SHELLEY**

**Editor**

Soldiers should be prepared for radiant light from the desert sun. The sun's rays, either direct or bounced off the ground, affect the skin and can produce eye strain or temporarily impair vision. Overexposure

to sunlight will cause sunburn, and excessive sunbathing or dozing in the desert sun can be fatal! People with fair, freckled skin, a ruddy complexion, or red hair are more susceptible to sunburn than others, but everyone is susceptible to some degree.

A suntan will provide some protection against sunburn, but should be acquired gradually and in the early morning or late afternoon. "Gradual" means the skin should be exposed no longer than 5 minutes on the first day, with 5 minutes

more being added each additional day. Extreme caution should be used while working in the sun, which is as dangerous on cloudy days as sunny days. And, sunscreen is not designed to give complete protection against excessive sun exposure.



The combination of wind and dust or sand particles can cause extreme irritation to the mucous membranes, lips, and other exposed skin surfaces. Eye irritation caused by fine particles entering the eyes is a frequent complaint of vehicle crews, even when wearing goggles. Chapped lips are also common in the desert. The use of chapstick and skin and eye ointment is imperative in preventing and minimizing the effects of wind and sand.

Proper standards of personal hygiene must be maintained in the desert. Daily shaving and bathing are required if water is available; cleaning the areas of the body that sweat heavily is especially important.


If sufficient water is not on hand for bathing, Soldiers can take a sponge bath or wipe down with solution-impregnated pads, a damp rag, or a dry, clean cloth. Underwear should be changed frequently and foot powder used often.

Soldiers should be checked for signs of injury, no matter how slight, as desert dust and insects can cause infection in minor cuts and scratches. Small quantities of disinfectant in washing water can reduce the chance of infection. It is important to remember that even minor sickness in the desert can have dire consequences. Prickly heat and diarrhea can upset part of the sweating mechanism and increase water loss,

raising susceptibility to heat illnesses. The buddy system can help ensure that prompt attention is given to these problems before they incapacitate Soldiers.

Finally, the desert is full of diseases. Common scourges found in the desert include plague, typhus, malaria, dengue fever, dysentery, cholera, typhoid, and leishmaniasis, or "Baghdad Boil" (see "You're Not a Pet," page 14). Although some of these illnesses can be prevented by vaccines or other measures, proper sanitation and personal cleanliness are vital to disease prevention. Proper mess sanitation is

also essential in the desert, and Soldiers should always wash their hands and mouth before meals to prevent illnesses such as "Kuwaiti Crud."

The desert should not be feared, but preparation is key to surviving and winning a desert war. Arm yourself with the facts and stay safe! —

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# Keep in Mind

## DID YOU KNOW?

The sun's rays are strongest between 1000 and 1500. To prevent sunburn and its long-term effects—including premature aging and skin cancer—Soldiers should incorporate sunscreen use into their daily routine. Soldiers should apply waterproof sunscreen to all exposed areas (including the ears, lips, back of the neck, and tops of the feet) at least 30 minutes before going outside for maximum effectiveness. After the initial application, an additional coat should be reapplied every 2 hours, especially after heavy sweating or swimming.

# You're Not a Pet

**JULIE SHELLEY**  
Editor

**C**hances are you know someone who's done it, or you've done it yourself. Flea collars work for man's best friend, so they should keep pests off man too, right? After all, well-meaning, patriotic Americans back home are sending flea collars in care packages to troops. Apparently someone's asked for them, and there are a lot of Soldiers sporting flea collars these days in Iraq. What could be wrong with just trying one out?

There's plenty wrong with humans wearing flea collars. It doesn't take a degree in medicine to figure out that putting that flea collar on probably isn't a good idea—all you need are basic literacy skills to read the package. However, many Soldiers will try anything to seek relief from the aggravation of sand flies and other pests in Iraq that emerge when the weather gets hot.

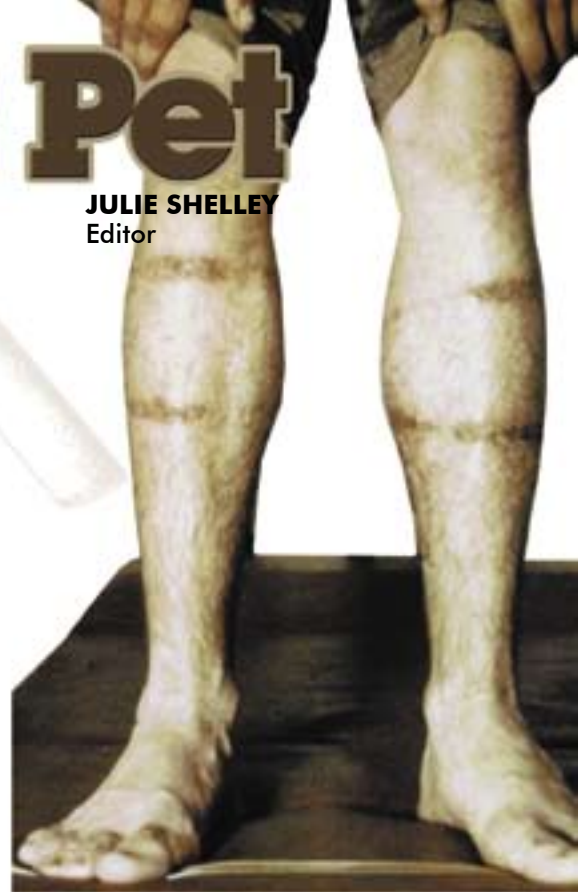
Flea and tick collars contain an assortment of pesticides including carbamates, organophosphates, and insect growth regulators. Toxic amounts of these chemicals can be absorbed into human skin and cause anything from severe skin reactions to systemic poisoning. Absorption occurs when sweat leaches out pesticides and other chemicals from the collars, often in large quantities. This is why flea

and tick collars are safe for cats and dogs—because they don't sweat. Instead, they pant to cool off.


The collars don't have to be next to the skin for absorption to occur—sweat can draw pesticides from the collars through fabrics. Therefore, you might think you've eliminated this hazard by wearing the collars outside your pants, socks, or boots, but you're still at risk for a nasty chemical burn or worse. Additionally, there's no return for your risk; currently no evidence exists that flea and tick collars are useful in repelling insects on humans. The pests will simply avoid the collar and go elsewhere on your body.

The Department of Defense has a very effective and approved insect repellent system available to all Soldiers. The DOD Insect Repellent System has two components: the regular-issue uniform treated with permethrin, and DEET insect repellent lotion. Permethrin is available in either an impregnation kit that treats one uniform and lasts the life of the uniform, or in an aerosol spray that treats one uniform and lasts five or six washes. Permethrin kills most insects upon contact with the fabric. A thin coat of DEET lotion should be applied to all exposed skin and should last up to 12 hours, depending on the climate.

For the DOD Insect Repellent



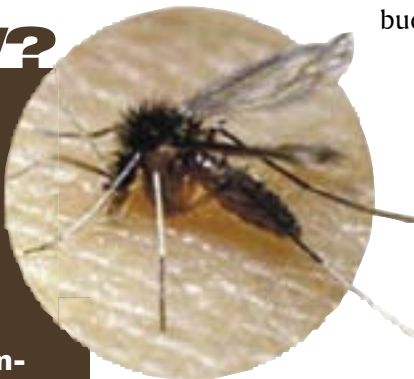
System to be effective, you must wear your uniform properly. Keep your sleeves rolled down, tuck your pants into your boots, and keep your undershirt tucked into your pants. One common misconception suggests that securing the pant legs closed with a flea collar shuts off access of biting insects to the skin. However, your uniform does the same thing—without the harmful side effects—as long as you keep your pants tucked firmly in your boots with the blousing cords drawn tight.

The Army's provided all you need to stay flea, fly, and pest-free through your deployment. You're not a pet. You're a vital part of the fight, and the Army and your buddies need you—fleas and all. 

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## DID YOU KNOW?

Sand flies are silent and only one-third the size of mosquitoes. These tiny insects carry diseases such as leishmaniasis ("Baghdad Boil") and feed most often from dusk to dawn. For more information on sand flies, flea collars, and other health-related topics in theater, visit the U.S. Army Center for Health Promotion and Preventive Medicine at [chppm-www.apgea.army.mil](http://chppm-www.apgea.army.mil).





**E**veryone knows the desert is hot, but you can't imagine just how hot it really is until you get there. We left for Kandahar, Afghanistan, from Fort Campbell, KY, where a blanket of snow covered the ground. Kandahar was the total opposite, though—hot and sunny. Everyone was told to drink water and watch out for their buddy because of the heat.

One factor got overlooked, however. An airframe exposed to sunlight can get extremely hot. I found this out the hard way while assembling aircraft parts left out in the sun.

We had put together one aircraft and were starting to assemble a second. I reached for the aircraft's stabilator, which was bubble-wrapped to protect it during shipment. After I grabbed it I quickly tried to let it go, because it was scorching hot! That definitely didn't happen at Fort Campbell in the winter.

I suffered a thermal burn and lost about two layers of skin off my fingers from grasping the hot metal.

After my injury, it became standard for personnel to

use gloves whenever touching an aircraft during daylight hours—no exceptions. We quickly forget in “real world” operations things we take into consideration during planning and training, such as the greenhouse effect on vehicle and aircraft exteriors. These oversights can lead to some pretty painful lessons learned.


Remember that vehicle exteriors and tools can get extremely hot when exposed to sunlight for only a few minutes. Vehicle crewmembers and maintenance personnel must wear gloves to prevent first- and second-degree burns when touching these items. However, should you or a buddy “get burned” by a vehicle or other hot metal, follow these first-aid procedures:

- Control any bleeding using direct or indirect pressure and by elevating the affected area.
- Run cool water—not freezing water or ice—over the burned area for at least 30 minutes. Smaller burns can be kept completely submerged in cool water. Flush the burn before calling for help.

- Remove all clothing and jewelry from the burned area, because swelling can develop rapidly. However, don't remove clothing that sticks to the skin. Leave that job for the professionals.

- Cover the burn with dry, sterile dressings if they're available. Don't break blisters or apply ointments of any kind.

- Always seek medical attention, no matter how small the burn might be. You can't risk an infection in the desert.

Remember, things are probably hotter than they appear. Wear your gloves and continue to be safe when you climb inside your vehicle. The heat of summer will end eventually, and we want you around for winter! 

Comments regarding this article may be directed to the editor at (334) 255-1218, DSN 558-1218, or by e-mail at [julie.shelley@safetycenter.army.mil](mailto:julie.shelley@safetycenter.army.mil).

# Ouch!

ANONYMOUS



# TRAINING AS THEY

**LTC JOSEPH MILLER**  
U.S. Army, IN

## **Current situation in Iraq**

The enemy's primary method of attacking coalition forces outside forward operating bases (FOBs) is detonating roadside improvised explosive devices (IEDs) or vehicle-borne IEDs. Insurgents travel down narrow canal roads in small pickup trucks while U.S. forces pursue them in bigger, wider HMMWVs. The enemy then collapses or blocks the road and initiates an IED or rocket-propelled grenade (RPG) ambush. Implementing direct-fire ambushes with AK-47s and RPGs is their secondary form of attack.

Many of these roads don't have markings or curbs and run parallel to canals and drainage ditches. Many roads in Iraq haven't been surveyed and often are narrow for Army vehicle operations. Our HMMWVs are about 7 feet wide and offer limited visibility because of either Level I or Level

II armor plating. These vehicles also are loaded with radios and additional equipment that further limit visibility.

Units that maintain a continuous presence reduce the number of attacks on coalition forces in their areas of operation. In other words, a unit that patrols their sector continuously forces the enemy to find another area in which to operate. With this goal in mind, units must constantly modify their tactics, techniques, and procedures to keep the enemy from detecting patterns. According to commanders, leaders, and Soldiers deployed for Operation Iraqi Freedom II, about 70 percent of all combat missions are conducted mounted. Of these missions, 50 percent are conducted at night. Thus, units must constantly conduct mounted patrols in their sectors and travel on unfamiliar and narrow roads.





# DRIVERS FIGHT

The heightened operations tempo is taking a toll on in-theater vehicle fatalities. From 12 September 2001 to 14 February 2005, the Army suffered 173 HMMWV accidents that killed 53 Soldiers. Our Strykers were involved in 20 accidents during the same period, killing five Soldiers.

## **Rollover trends**

Leaders should incorporate several lessons learned during their pre-deployment training for mounted combat operations in theater. Drivers should be trained to operate their vehicles at faster speeds to avoid IEDs. Drivers, vehicle commanders, and gunners should be taught to function and communicate as a team. Crewmembers must be trained to scan and communicate road hazards with one another and receive instruction on driving,

backing, and turning their vehicles on narrow roads. Additionally, units deploying to Iraq should receive their M1114 HMMWVs to train with before deployment. In the past, some units have gotten their M1114s in Kuwait and driven them into Iraq without additional training.

When leaders conduct their risk assessment before combat missions, they update and brief the tactical or enemy risks extremely well but often leave out the accident or hazard-based risks. Leaders must brief locations along the routes where the roads are narrow or have steep drop-offs. Drivers also should know the effects of current weather on driving. In sum, leaders must incorporate Composite Risk Management to account for all potential hazards encountered on any given mission.

In the past, some commanders have directed



# “IN SUM, LEADERS MUST INCORPORATE COMPOSITE RISK MANAGEMENT TO ACCOUNT FOR ALL POTENTIAL RISKS ENCOUNTERED ON ANY GIVEN DAY.”

their Soldiers not to wear their seatbelts in case they must egress the vehicle quickly. These commanders based their decision on the perceived threat of being trapped in a burning or overturned vehicle with the enemy firing on them. However, being hit with an IED or rolling over in an accident are the primary threats in Iraq. Seatbelts allow Soldiers to remain conscious and in their seats within a violently tumbling vehicle and then exit the vehicle after it stops. Commanders now know that, statistically speaking, it's better for their Soldiers to wear seatbelts.

Rollover drills must be rehearsed. Without rehearsals, there's no “muscle memory”

instilled in the Soldiers when a rollover does happen. Gunners are crushed because they haven't physically trained to drop down into the gunner's hatch. Another problem is that some rollover drills often don't include procedures for egressing the vehicle through a single door. M1114s don't have an emergency opening that allows Soldiers to evacuate the vehicle quickly if it's upside down and the doors are blocked. These factors have caused Soldiers to drown because they were trapped inside their vehicles. Other Soldiers have suffered severe shock and hypothermia while trying to rescue comrades trapped in very cold water.

## Recommendations

Units currently deploying to Iraq, as well as the ones already there, must train day and night until they achieve proficiency as a team on the following tasks:

- Alerting other crewmembers and other vehicles of upcoming hazardous conditions
- Recognizing when a road is too narrow and stopping the vehicle
- Turning and backing the vehicle on a narrow road lined by canals
- Safely driving through simulated traffic at faster-than-normal speeds to imitate traveling through areas with possible IEDs
- Driving around cones







# INCORPORATE IT TO HAZARDS MISSION.

without hitting them so crews can understand their vehicle's required clearances

- Driving the vehicle partially off the road and correctly re-entering the road without rolling over

- Correctly transitioning from blackout drive to service drive, and then back to blackout drive

- Conducting rollover drills in accordance with Graphic Training Aid 55-03-030, "HMMWV Up-armored Emergency Procedures Performance Measures," available through the Reimer Digital Library at [https://atiam.train.army.mil/soldierPortal/atia/adlsc/view/restricted/20779-1/GTA/55-03-030/5503030\\_TOP.HTM](https://atiam.train.army.mil/soldierPortal/atia/adlsc/view/restricted/20779-1/GTA/55-03-030/5503030_TOP.HTM). You must have an AKO user id and password to access this site.

- Rehearsing, at a minimum of once a month, rollover drills with the crew egressing out a single door with the combat lock engaged

- Training all the above tasks when the unit receives its M1114s or Stryker slat armor in Kuwait

Commanders and leaders must conduct a composite risk assessment before every combat operation, including follow-on missions. A composite risk assessment is a running estimate of the

situation that must be updated continuously. It combines accidental risk factors such as weather, crew selection, terrain, illumination, or traffic with the tactical risk posed by the enemy.

Additionally, commanders and leaders must ensure all Soldiers wear their seatbelts during mounted combat missions outside the FOB. Leaders should rehearse rollover drills at least once a month, to include evacuating the vehicle through a single door. The Program Executive Officer-Combat Support and Combat Service Support currently is working to modify the HMMWV family of vehicles so Soldiers can egress quickly if they're upside down in water with all four doors blocked.

Vehicle accidents have claimed far too many of our Soldiers already and continue to kill at an alarming rate. We must do everything we can to turn the arrow down and bring our Soldiers home safe. Operations in Iraq are a whole different ball game from what we're used to in the United States. Take note of your lessons learned and train your Soldiers right. —

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# Probability, Perception, and Putting on Your Seatbelt

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**W**ould you go to Las Vegas and bet your life on a spin of the roulette wheel? I hope not! You'd probably question the intelligence of anyone willing to make such a gamble. Yet many of our Soldiers bet their lives every day when they don't use their seatbelts in tactical vehicles, especially in theater. Why is this happening?

I heard all the familiar excuses while working as a safety advisor to the Combined Joint Task Force-7 command staff in Iraq. "The seatbelt keeps me from getting out of the vehicle fast." "It restricts me from turning sideways in the seat." This one really scares me: "I was told not to use it."


Aside from commanders telling them not to use seatbelts, why would Soldiers make an independent decision not to buckle up in combat? People make decisions based on their perception of the likelihood an event will occur. Roadside bombings and ambushes are common in Iraq, so it's natural that Soldiers will do everything possible—including not wearing seatbelts—to "protect" themselves during these events.

Perception of occurrence is influenced by perception of control, and these factors play into Soldiers' decision-making processes, including seatbelt usage. When someone thinks they're in control, they perceive a low likelihood of having an accident. Many Soldiers think accidents only happen to other people; this overconfidence results from their feelings of control. However, we can't control the enemy and can't predict with any certainty when he'll

strike. Thus, just in case they're ambushed or bombed, Soldiers feel they have more control if they don't wear their seatbelts.

This skewed perception can get Soldiers in trouble. Most Soldiers believe they're more likely to die because they can't get out of a vehicle quickly during an ambush or bombing. In their minds, the risk of injury or death in a rollover or other accident is secondary. It makes sense to them, then, not to wear seatbelts in combat.

This logic is flawed. Army regulations say seatbelts must be worn at all times—even in combat—for a simple reason. Statistics show many more Soldiers are injured or killed because they aren't wearing their seatbelts than are killed by the enemy because they can't get their seatbelts off quickly. Did I mention there hasn't been a single documented case of the latter happening? In other words, ZERO Soldiers have died because they were trapped by their seatbelts during enemy activity, but many have been killed because they weren't buckled up during a vehicle accident.

An intelligent person learns from their own mistakes, but a wise individual learns from the mistakes of others. I hope you'll make sound decisions and carry out safe operating procedures every time you begin a mission. Remember, the probability of you making it home safe is MUCH greater if you wear your seatbelt. Your family, friends, and the Army will thank you for it. 

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## The Road to Baghdad

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**L**ooking back, it seems like the battle for Baghdad was the easy part. My unit, the 10th Logistics Planning Augmentation Team, prepared for months before being deployed for Operation Iraqi Freedom I. We're a 7th Army Reserve Command unit based out of Germany, and we were mobilized to support the V Corps G4. The battle was easy because we'd trained for it. The hard part, which we hadn't trained for, came later.

After Baghdad fell, V Corps moved from Balad to Baghdad to establish the

Combined Joint Task Force-7 (CJTF-7) headquarters in one of Saddam Hussein's former palace complexes. The CJTF-7's mission was to assist the Iraqi people in reconstruction efforts and also to oversee the transition of authority to an interim Iraqi government. This was a big task, but we had to get to Baghdad before we could start. This was the hard part—getting everyone to the base camp without an accident or enemy incident.

Although the road from Balad to Baghdad was only about 60 kilometers, the way was fraught with

risks. Risk management is a vital part of planning and executing operational missions, so an assessment of the situation was in order. The difference between this movement and a road march in a training environment was the introduction of real-world threats and the uncertainty of the tactical situation. We expected to encounter anything from organized ambushes to rocks thrown at us from bridges as we passed underneath.

The situation clearly called for a composite risk analysis. Composite Risk

Management (CRM) blends tactical, threat-based dangers with accidental hazard factors to provide a more complete picture of the overall risks. Once we identified all the risks, we conducted an analysis to assess the likelihood of each one occurring and their potential impact.

In addition to the standard preventive measures taken for a tactical road march, we developed emergency action drills so every Soldier could react to any situation. The NCOs ensured every driver and passenger had their



# Don't Drive It Like You Stole It!

**"D**rive it like you stole it!" Leading up to this deployment, I heard these words at least a thousand times. During training, we initially were taught convoy procedures according to Army doctrine. Guidelines for safe and tactically sound convoy operations were passed on to us as we prepared to enter Iraq, with its infamous history of roadside bombings and ambushes. But over time, as the lessons learned began to trickle back from Iraq, the above statement became our battle cry.

I've had difficulty judging this tactic's merits. It seems to make sense, or does it? The faster you drive, the less time you spend on the road (even though traffic studies in the U.S. have shown the amount of time you actually

"save" by speeding is negligible). Logic dictates that by saving even a few seconds (and seconds count in combat) on the road, you're exposed to less danger from the human enemy. However, you're at greater risk for a catastrophic accident such as a rollover. So, does the time-saving benefit outweigh the gain of safely operating the vehicle? I'm not qualified to say, but I've seen firsthand how this attitude can create a "cowboy" mentality behind the wheel. This mentality often lingers after the mission and affects the way vehicles are operated within the boundaries of our forward operating bases (FOBs).

I witnessed a vehicle accident my first day in Iraq. A Soldier didn't use a ground guide and backed into a parked HMMWV. Just recently I

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was walking to the mess hall across a gravel field when a HMMWV came speeding into my path. I had to jump out of the way to avoid being hit. Apparently the driver had decided to take a shortcut across the gravel field instead of using the road. He'd still have been speeding even if he'd been on the road, and as he passed I saw that he and the assistant driver were engaged in some sort of horseplay. They never realized I was there until I yelled for them to slow down.

This place is dangerous enough without doing senseless things behind the wheel of a vehicle. It's little wonder motor vehicle accidents—both here and at home—are the number one cause of Soldier deaths outside combat. There's no excuse for not following the rules simply because you're in combat—safety should never be compromised! Instead, adopting safety and implementing Composite Risk Management is the means to sustain combat power and preserve our readiness. I don't mean to scold or preach, but the bottom line is simple: Most accidents are preventable. Keep the following rules in mind when you're behind the wheel:

- Wear your seatbelt
- Wear your helmet




- Obey speed limits, or use common sense in their absence
- Practice rollover drills
- Use ground guides when backing or operating a vehicle in confined areas
- Use nametag defilade in turrets

The chances of you getting pulled over by an angry state trooper here are nonexistent. In their place are commanders, sergeants major, and first sergeants who must make vehicle safety a top priority. Keep the roads inside our FOBs safe, and plan for all hazards on the outside roads—those posed by the enemy, the environment, and you. The life you save could be your own! 

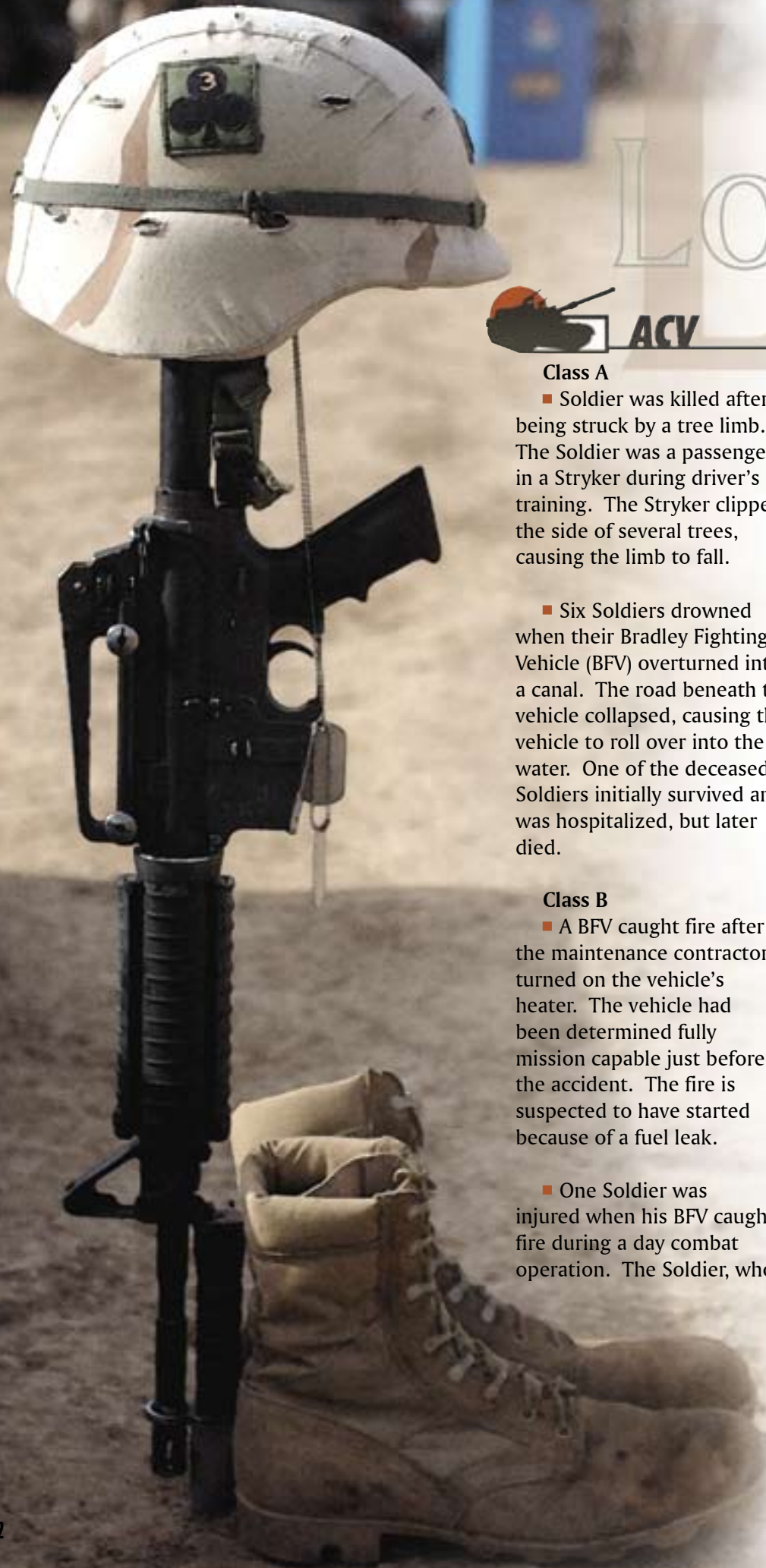
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respective instructions and rehearsed the drills. Everyone took the training seriously, especially since we weren't a combat unit making the trip in armored vehicles. Instead, we were riding in "soft-skinned" HMMWVs and open 5-ton trucks.

We trained and prepared until we mitigated the risks as much as possible. The only remaining task was to supervise and evaluate our performance while executing the movement

plan. Everyone was apprehensive and the tension was high a few times along the way, but we made it to Baghdad without incident. It wasn't luck—I believe our success was influenced by leaders who cared enough to do the right thing and practice CRM. Our Soldiers will never forget that trip, and they're all here to remember it. That's true victory. 

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# Lost



## ACV

### Class A

- Soldier was killed after being struck by a tree limb. The Soldier was a passenger in a Stryker during driver's training. The Stryker clipped the side of several trees, causing the limb to fall.

- Six Soldiers drowned when their Bradley Fighting Vehicle (BFV) overturned into a canal. The road beneath the vehicle collapsed, causing the vehicle to roll over into the water. One of the deceased Soldiers initially survived and was hospitalized, but later died.

### Class B

- A BFV caught fire after the maintenance contractor turned on the vehicle's heater. The vehicle had been determined fully mission capable just before the accident. The fire is suspected to have started because of a fuel leak.

- One Soldier was injured when his BFV caught fire during a day combat operation. The Soldier, who

was driving the vehicle, was treated for smoke inhalation. The source of the fire was not reported.

- Three M1A2 tanks suffered Class B damage when one of the tanks collided with the other two. Two of the tanks had stopped to allow the third tank to pass. The third tank slid on the road's surface and struck the two stopped tanks.



## AMV

### Class A

- One Soldier and one Department of Defense contractor were killed when their HMMWV was broadsided by a Stryker. No other details were reported.

- Two Soldiers drowned when their up-armored HMMWV overturned into a canal. The crew was part of a night multi-vehicle patrol mission at the time of the accident.



**Soldier suffered a fatal gunshot wound to his head when a .50 cal machine gun discharged in the motor pool. The Soldier had driven his M1A1 tank into the motor pool after a combat mission, and the tank's crew was securing the gun when it discharged.**

■ Soldier died after a HMMWV struck him during a battalion-level tactical road march. No other details were reported.

■ Two Soldiers were injured and one civilian was killed when the Soldiers lost control of their M915 while going to refuel. The M915 slid into another lane and collided with three civilian vehicles, causing the civilian fatality and an additional civilian injury.



## Personnel Injury

### Class A

■ Soldier died after complaining of chest pains during a physical training (PT) test. The Soldier was transferred to a local hospital, where he went into cardiac arrest and died.

■ Soldier collapsed and died during a PT run. No other details were reported.

■ Soldier was killed after she hit the ground during an Airborne operation. The Soldier's primary chute apparently failed, and her reserve chute was not deployed.

■ Two foreign national troops suffered fatal gunshot wounds when a Soldier opened fire on them. The two troops were moving suspiciously around a bunker

and were unidentified at the time of the shooting. One other foreign national troop was wounded.

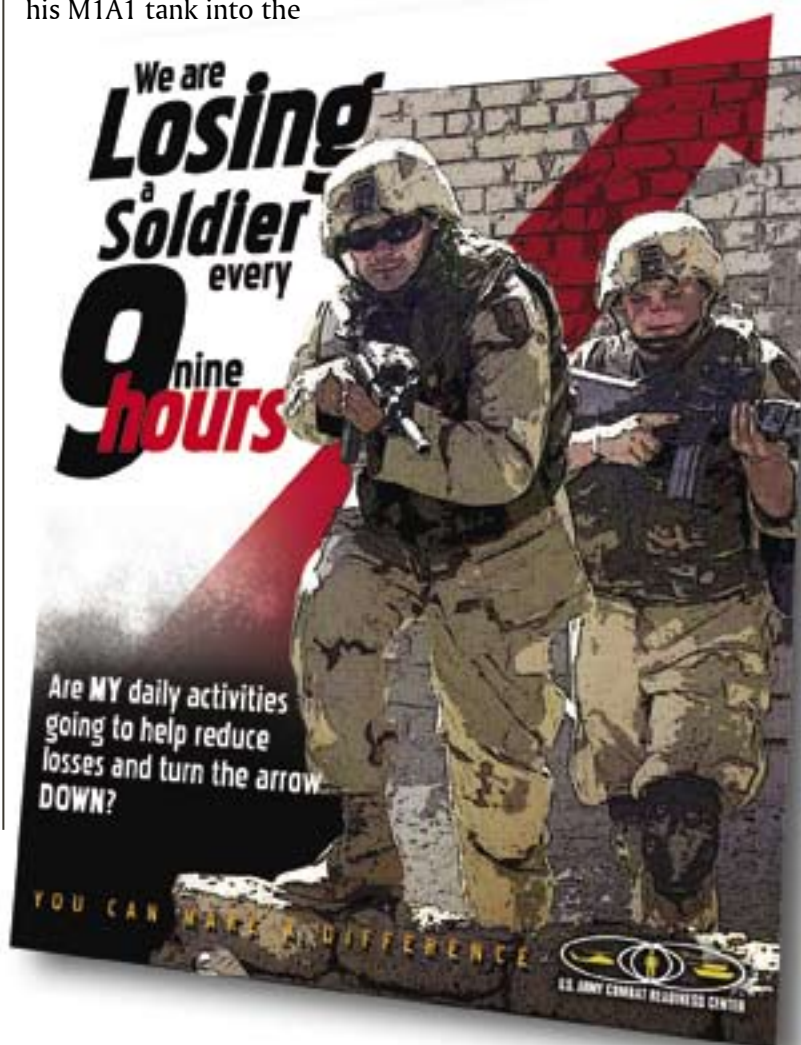
■ Soldier suffered a fatal gunshot wound during a joint patrol with foreign national troops. One of the foreign troops' AK-47s accidentally discharged, striking the Soldier.

■ Soldier suffered a fatal gunshot wound to his head when a .50 cal machine gun discharged in the motor pool. The Soldier had driven his M1A1 tank into the

motor pool after a combat mission, and the tank's crew was securing the gun when it discharged.

### Class C

■ Soldier suffered a concussion and short-term memory loss after his rucksack struck him in the back of the head. The Soldier had completed an Airborne operation and was running to the assembly area when he tripped in a depression and fell, causing the rucksack to hit his head.



# 115°F in the shade

Let's say that it's 100 °F outside (and it gets much hotter in Iraq). The human body wants to stay at 98.6 °F. The only way to stay at 98.6 is to sweat. By putting moisture on the skin and letting it evaporate, your body can cool itself very effectively and keep its temperature in the proper range.

Sweat works really well as long as there's plenty of water in your body—it takes water to manufacture sweat. If you run out of water, sweat stops and your body rapidly overheats. And, it's extremely easy to run out of water: Your body can produce 0.5 gallons (2 liters) of sweat every hour in a hot environment. Unless you are drinking water at the same rate, you'll dehydrate and then stop sweating. Your internal thirst meter often is not sensitive enough when you need that much water (and it's been said that by the time you feel thirsty, you're already dehydrated). You must keep drinking, no matter how thirsty you feel!

## Don't Forget the H<sub>2</sub>O!



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